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The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Assistant Dean for MSN and DNP Studies, on behalf of the program; we verify that this is the final, approved version of the student's DNP Project including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

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Dr. Melanie Hardin-Pierce, Advisor

Increasing Adherence to a Light Sedation Protocol by Increasing Nurses' Knowledge and
Confidence

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing
Practice at the University of Kentucky

Katie L. Rust BSN, RN

Lexington, KY

Spring 2020

Abstract

BACKGROUND: Oversedation in the mechanically ventilated patient can cause long- and short-term adverse side effects. Light sedation practices provide patients with relief from agitation and pain and still allows them to actively participate in care. A light sedation protocol was introduced to bedside ICU registered nurses (RNs) at the University of Kentucky Medical Center (UKMC), but deep sedation is still commonplace. Reeducating bedside RNs and increasing their knowledge and confidence is a proposed strategy for increasing adherence to light sedation protocols.

PURPOSE: The purpose of this quality improvement project was to gain understanding of bedside RNs knowledge and perceived confidence regarding the established light sedation protocol before and after education to determine ways to increase adherence to the light sedation protocol.

METHODS: Pre and post-test surveys were distributed to the bedside registered nurses working in the Medicine Intensive Care Unit (MICU) at UKMC. The survey contained 5 knowledge questions, 5 confidence questions, and 1 “choose all that apply” question. Education sessions were provided to the bedside RNs with the use of educational outreach, change champions, and opinion leaders, between the pre and post-test survey that detailed the light sedation protocol. The knowledge question answers were compared to determine total answers correct. The confidence questions allowed the RNs to rate their perceived confidence using a 5-point Likert scale, and those responses were compared for changes. The “choose all that apply” question allowed RNs to choose what barriers they identified for using the light sedation protocol.

RESULTS: The total knowledge score for the pretest ($n=83$) had a mean(SD) of 3.98(0.86) and the total knowledge score for the posttest ($n=57$) had a mean(SD) of 4.05(1.06) which was not

statistically significant with a $p=0.64$. Four of the five confidence questions showed a significant increase in the bedside nurses' confidence level. There was no statistically significant change in what nurses determined as barriers to using the protocol from the "choose all that apply question."

CONCLUSION: Knowledgeable and confident nurses are vital for improving patient outcomes. However, if multiple barriers are identified by bedside staff, implementation of a practice change will be difficult. When the practice change is multifactorial then a team approach may be better for success. Further research needs to be done to assess the knowledge and perceived confidence of other healthcare providers to understand the attitudes of the multidisciplinary team regarding the light sedation protocol. Reviewing the electronic health record for adherence to charting assessments and interventions would be pivotal for understanding nursing adherence to protocol.

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Dedication

I would like to dedicate this project to my parents, family, and colleagues. First, my mother, Dr. Christina Rust, who has been my inspiration to further my education. Your love and support motivated me to finish the program and has made me feel like nothing is impossible, you are the strongest and bravest woman I know. Thank you to my father, William Rust, thank you for placing a strong focus on education and for always pushing me to be the best version of myself. To my brothers, Adam and David, thank you for being the comic relief I need in my life, for being my best friends, and for always answering the phone when I call for a pep talk. Finally, a huge thank you to my colleagues in the Medicine ICU, who have become my friends and family, thank you for teaching me every day and helping me grow into a stronger and smarter nurse. I am forever thankful for the encouragement all of you have provided to me over the last 5 years. We did it!

Table of Contents

| | |
|---|----|
| Acknowledgments..... | 4 |
| Introduction..... | 8 |
| Background..... | 9 |
| Literature Review..... | 10 |
| Light Sedation Protocols Improve Patient Outcomes..... | 10 |
| Targeted Light Sedation Protocols and Assessment Tools..... | 11 |
| Nurses' Perceptions of Light Sedation Protocols and Barriers..... | 13 |
| Education, Interventions, and Evidence-Based Practice..... | 15 |
| Theoretical Framework..... | 16 |
| Purpose..... | 18 |
| Methods..... | 19 |
| Study Permission..... | 19 |
| Setting..... | 19 |
| Study Population..... | 20 |
| Study Design..... | 20 |
| Research Procedures & Data Collection..... | 21 |
| Data Analysis..... | 22 |
| Results..... | 22 |
| Discussion..... | 24 |
| Summary..... | 27 |
| Limitations | 28 |

| | |
|---|----|
| Implications for Practice and Future Recommendations..... | 29 |
| Conclusion..... | 32 |
| References..... | 33 |

List of Tables

| | |
|---|----|
| Table 1. Pre and Posttest Scores for Knowledge and Confidence levels..... | 37 |
| Table 2. Pre and Posttest Choose All That Apply Data- Barriers..... | 37 |

List of Figures

| | |
|--|----|
| Figure 1. Form F Cover Letter..... | 38 |
| Figure 2. MICU Oral/IV Push Sedation Protocol Education..... | 39 |
| Figure 3. Survey Questions..... | 43 |
| Figure 4. EHR Order Set..... | 45 |
| Figure 5. EHR CPOT and RASS Documentation..... | 45 |

Introduction

Evidence-based practice is the guiding force for care delivery in academic institutions because it focuses on using up to date research for improving patient outcomes (Melnyk & Fineout-Overholt, 2015). With the introduction of new evidence-based interventions comes the task of standardizing care throughout an entire healthcare system. Registered nurses need to be trained to utilize evidence-based practice (EBP) in their daily care routines, because patient outcomes improve with the implementation of evidence-based practice at the bedside (Melnyk, 2002). Registered nurses spend the most time dedicated to direct patient care out of all healthcare providers, which means that healthcare organizations should ensure the proper education and training of bedside nurses to carry out practice changes (Melnyk, 2002). Academic healthcare facilities should actively assess the effect of EBP changes at the bedside for cost effectiveness and patient mortality (Melnyk & Fineout-Overholt, 2015).

Perceived barriers, such as lack of knowledge, misperceptions and attitudes, patient expectations, and organizational constraints, can prevent adherence to evidence-based protocols (Melnyk, 2002). Identifying the barriers preventing bedside nursing staff from adopting EBP in an academic medical center can influence plans for creating change in the methods of care delivery (Melnyk, 2002). The purpose of this practice inquiry is to investigate the impact and effectiveness of an evidenced-based education intervention in conjunction with educational outreach, opinion leaders, and change champions on the bedside nurses' level of knowledge and perceived confidence regarding the use of a previously implemented standardized light sedation protocol in a medicine intensive care unit (MICU) at an academic medical center (Titler, 2008). This study will look at the correlation between the bedside nurses' levels of knowledge and

perceived confidence with the barriers they identified regarding the use of a previously established protocol before and after an education intervention.

Background

The Society of Critical Care Medicine published Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption (PADIS) in Adult Patients in 2018 outlining effective treatment strategies that can be used for patients undergoing mechanical ventilation. These guidelines determined that targeted light sedation is the ideal level of sedation for treating agitation and pain in the mechanically ventilated patient in the ICU (Devlin et al, 2018). These evidence-practice clinical practice guidelines were the basis for the development and subsequent introduction of an oral/IV push sedation/analgesia protocol (Figure 2) in the Medicine Intensive Care Unit (MICU) at the University of Kentucky Medical Center in 2018 by the MICU pharmacy team. The MICU oral/IV push sedation/analgesia order set is located in the electronic health record (EHR) (Figure 4), and details the target Critical Care Pain Observation Tool (CPOT) score, goal Richmond Agitation Sedation Scale (RASS) score, how frequently these scores should be assessed and documented (Figure 5), which medications to administer including the time, frequency, route, and dose, and appropriate times to notify providers for when the patient remains symptomatic despite interventions.

Despite the development and introduction of the MICU oral/IV push sedation/analgesia protocol by the MICU pharmacy team, many patients receive sedation and analgesia through the administration of continuous drip medications. Adoption of new practices can be difficult especially when trying to implement these practices in large care areas (Titler, 2008). Without knowledgeable, confident, and actively engaged nurses, evidence-based practice changes will not

be successful (Guttormson, 2019). In order to increase compliance to evidence-based practice interventions, effective dissemination strategies need to be created to improve compliance and adherence to changes in care (Titler, 2008). Assessing the RNs level of knowledge, perceived confidence, and perceived barriers to utilizing protocols, before and after the intervention, will be helpful for understanding knowledge deficits, systems problems, and ineffective processes occurring at the bedside and will help to orchestrate future education interventions and implementation strategies.

Literature Review

A literature review was conducted using the University of Kentucky Medical Library database CINAHL. This literature review was performed to assess sedation protocols and strategies for implementing evidence-based practice. The key search terms used for this literature review include ‘sedation protocol’, ‘light sedation protocol’, ‘nurses’ perceptions’, ‘perceived barriers’, ‘mechanical ventilation’, ‘RASS’, ‘CPOT,’ ‘education,’ ‘change champion,’ ‘opinion leaders,’ and ‘evidence-based practice implementation.’ A total of 108 articles were found and 16 were found to be relevant to this study.

Light Sedation Protocols Improves Patient Outcomes

Without established guidelines, sedation practices can vary amongst bedside nursing staff caring for patients on mechanical ventilation which can lead to over or undersedation. Minhas et al., explains that the side effects from oversedation can lead to increased ICU length of stay, prolonged mechanical ventilation, more episodes of delirium, and higher rates of mortality (2015). The longer a patient remains under heavy sedation, scoring a RASS of -3 to -5, increases the risk for adverse events including increased mortality and longer duration of mechanical ventilation (Shehabi, 2013). The use of targeted light sedation was associated with a shorter time

to extubation and a reduced rate of tracheostomy placement (Devlin et al, 2018). Treating patients with a light sedation protocol compared to deep levels of sedation decreases the incidence of memory problems and symptoms of posttraumatic stress disorder related to the ICU admission (Hughes, 2013). A systematic review and meta-analysis performed by Stephens et al. also discovered that the use of light sedation was associated with the same improved clinical outcomes as other studies, including decreased ICU length of stay, hospital mortality, and mechanical ventilator days (2018).

Targeted Light Sedation Protocols and Assessment Tools

Targeted light sedation is a valid means for managing pain and agitation in patients on mechanical ventilation. Aiming for RASS scores of -2 to 0 ensures that patients have a better chance of actively participating in care. Standardizing sedation and analgesia administration and assessment of agitation and pain can prevent nursing bias when it comes to caring for this patient population and potentially reduce oversedation (Minhas, 2015). Sedation significantly impacts patient care, including the patient's physical and mental well-being following mechanical ventilation and ICU admission.

Light sedation is recommended for the best patient outcomes and even though this level of sedation is not well defined, a RASS score of -2 to +1 was considered light sedation in the research articles that were evaluated for the PADIS guidelines (Devlin et al, 2018). Laerkner, Stroem, and Toft theorized that patients on mechanical ventilation with no sedation had better outcomes and more awake periods than those receiving sedative medications (2016). The awake group reported higher rates of wakefulness on mechanical ventilation; however, these patients still received bolus doses of morphine to treat pain which may have had sedative side effects (Laerkner, 2016). This study leads to discussions about treating pain before agitation to manage mechanically ventilated patients and providing pain relief before sedation (Laerkner, 2016). The

PADIS guidelines also recommend treating a patient's pain before treating perceived agitation, because pain often leads to agitation in the mechanically ventilated patient (Devlin et al., 2018). Targeting and treating pain prior to treating agitation allows patients to experience more awake periods while intubated and helps to optimize patient outcomes by allowing patients to actively participate in mechanical ventilator weaning (Hughes, 2013). Liberation from the mechanical ventilator as early as possible should always be a top priority after intubation.

After determining that light sedation is a reasonable goal for the management of pain and agitation and adopting the correct practices for scoring pain and agitation, it is appropriate to combine or bundle these interventions to manage patient care. These types of guidelines highlight the importance of assessing and treating pain first, then treating agitation if necessary (Devlin et al, 2018). The Richmond Agitation-Sedation Scale (RASS) and the Critical Care Observation Tool (CPOT) are appropriate assessments scales to use in the intensive care unit for guiding the administration of sedation and analgesia (Devlin et al., 2018). These objective tools allow a bedside nurse to determine agitation and pain based on clinical signs and symptoms. The RASS gives the bedside nurse the ability to score the patient's level of agitation and sedation on a scale from -5 to +4, with -5 indicating the patient is unarousable or unresponsive, 0 indicating the patient is alert and calm, and +4 indicating the patient is combative or violent (Sessler, 2002). A common RASS score goal is -2 to +1 indicating that the patient is lightly sedated, but a RASS score of 0 provides better outcomes for patients (Devlin & Pandharipande, 2018). For intubated patients, the nurse assesses facial expressions, body movements, muscle tension, and compliance with the ventilator (Gélinas, 2006). This scale allows for less bias from the standpoint of the bedside nurse; however, it still provides a high degree of autonomy for assessing the patient.

These scoring tools are put in place to decrease nursing related bias, but agitation and sedation assessment can still be inconsistent from nurse to nurse.

Nurses' Perceptions of Light Sedation Protocols and Barriers

In a national survey assessing nurses' attitudes and practices regarding sedation, nurses revealed that providers strongly consider their assessments when writing orders for sedation, and that these orders were broad enough to allow the bedside nurse to administer appropriate amounts of sedation (Guttormson, 2019). This same study exhibited a positive correlation between the intent to relieve signs and symptoms of discomfort, through the administration of sedatives, with the intent to sedate all patients receiving mechanical ventilation (Guttormson, 2019). Other factors that might decrease adherence to sedation protocols are nurses' desires to minimize patient discomfort, stress, and dysynchrony with the mechanical ventilator. This demonstrated that without actively engaged nurses it is more difficult to create innovation at the bedside.

For protocols to succeed, education needs to be considered a top priority to increase knowledge of the protocol and competence in the use of protocol among all members of the multidisciplinary team (Dale, 2014). Nursing led analgesia and sedation algorithms are largely dependent on the support the nurse receives from the medical team and the education provided to them about the use of new protocols (Borkowska, 2018). Evaluating the attitudes of the bedside nursing staff about a practice change, such as a new protocol, is a determining factor for whether a protocol is successful at improving sedation patient outcomes. A multimodal approach to sedation, analgesia, and mechanical ventilation helps to guide bedside nursing care and improve quality outcomes (Borkowska, 2018).

Nurses' reports of sedation assessments have a wide range of variability and this is a cause for concern since sedation and analgesic dosages are dependent on these scores. (Devlin et

al, 2018). Because sedative medication administration is titrated based on the sedation assessment scores, variability in sedation assessment scoring can have negative impact on patient outcomes. Communication between nurses during the change of shift hand off is another important factor in protocol adoption. Understanding the goals of care for a patient will directly affect protocol adherence. Active participation in the protocol and continuous reassessment of the analgesia or sedation intervention allows the nurse to be methodical and precise in their approach to patient care and pain/sedation management (Devlin et al., 2018). Nurses guide sedation practices in critical care areas for mechanically ventilated patients and in order to create a culture change, the nurses must be knowledgeable and confident in using sedation/analgesia protocols. Proper instruction on how to perform and communicate assessment results can lead to improved documentation of RASS scores which correlates with improved EBP implementation (Dale, 2014). The study performed by Guttormson discovered that nurses had a varying understanding of oversedation and undersedation, which would indicate the need for further education regarding the care for alert and interactive patients on the ventilator (2019).

In a study performed by Tanios et al., a survey was distributed to multidisciplinary members of SCCM to identify barriers to light sedation protocols (2009). The survey largely identified device removal, respiratory compromise, and the lack of nurses' acceptance as barriers to utilizing sedation protocols (Tanios et al., 2009). Light sedation practices are not associated with an increased risk for self-extubation or device removal (Shehabi, 2013). Patients receiving mechanical ventilation can be treated with light sedation and the use of an oral/IV push sedation/analgesia protocol can be implemented appropriately without putting patients at risk for injury and potentially improving outcomes (Devlin et al, 2018).

Education, Interventions, and Evidence-Based Practice

Evidence-based practice is used to guide all aspects of nursing care. Implementing these practice changes, such as at the MICU oral/IV push sedation/analgesia, can be guided through the use of a theoretical framework like the Iowa Model of Evidence Based Practice and the Agency for Healthcare Research and Quality (AHRQ) Model of Knowledge Transfer. The Iowa Model illustrates the need for creating a feedback loop to understand the effectiveness of a practice change (Melnik and Fineout-Overholt, 2015). Education is vital to the adoption of clinical practice improvements, but it is not enough in itself to create long lasting change (Titler, 2008).

Utilizing ‘opinion leaders’, ‘educational outreach,’ and ‘change champions’, along with education, are three ways to increase adherence to the evidence-based practice change (Titler, 2008). An opinion leader is someone within the peer group who can effectively change other healthcare providers actions through use of educational strategies including on-unit training, personalized discussion, and answering questions (Titler, 2008). In a cluster randomized trial performed at 19 National Health Service hospitals, three separate interventions, ‘standard dissemination (SD) of a guideline package’, ‘SD plus a web-based resource’ delivered by an opinion leader, and ‘SD plus plan-do-study-act (PDSA),’ were performed at different facilities to understand the effectiveness of implementation strategies for a improve peri-operative times (Rycroft-Malone et al, 2012). Educational outreach visits were shown to be effective for guideline development. The use of opinion leaders was reviewed as having ‘mixed effects;’ however, without leadership guideline adoption suffers (Rycroft-Malone et al, 2012). This concept is exemplified by the use of educational outreach. As outlined by Titler, the used of educational outreach, or academic detailing, can offer a significant impact on the adoption of practice change (2008). Educational outreach is performed by someone who is an expert

regarding the evidence-based practice change, for the purpose of this study the EBP change is the light sedation protocol, who provides educational resources to clinicians in their work setting (Titler, 2008). The experts providing the academic detailing must be unwavering in their approach to delivering information and responding to questions.

Similarly, change champions use their field of expertise and dedication to practice innovation to encourage that their peers ratify new practice changes (Titler, 2008). Education from these peer informants is a preferred strategy to use for gaining the acceptance of a practice change, because nurses respond better to information disseminated to them from a peer and through interpersonal exchanges (Titler, 2006). In care areas that demonstrate strong teamwork and clear communication, EBP implementation is more successful (Rycroft-Malone et al, 2012). Change champions are recognized as positive influential roles in the nursing units where they are employed (Cullen et al, 2020). Providing actionable feedback and sharing evidence that supports the practice change are two active processes that can be used by change champions to implement practice change (Cullen et al, 2020).

Theoretical Framework

The Iowa Model of Evidence-Based Practice as outlined by Melnyk and Fineout-Overholt, can be used to help clinicians make dynamic changes in patient care (2015). The Iowa Model encourages providers in the healthcare system to question current practices based off a clinical problem or new research recommendations (Melnik & Fineout-Overholt, 2015). The Iowa Model houses several feedback loops that focus on analysis, evaluation, and modification so that new practices are constantly being evaluated to determine if the changes are appropriate and if they should be adopted into practice. The Iowa Model specifically works for

interdisciplinary team management because it uses the scientific process to follow basic problem-solving techniques (Melnik & Fineout-Overholt, 2015).

The Iowa Model promotes clinicians to identify problems in their specific practice areas (Melnik & Fineout-Overholt, 2015). Largely, these “triggers” are identified by providers who question the current standard of practice (Melnik & Fineout-Overholt, 2015). The clinical problem that was identified is oversedation and low compliance by the bedside nursing staff to use a previously established light sedation protocol in the mechanically ventilated patient population. Once a problem is identified it must be determined if it is clinically relevant to the entire organization or a large patient population. The University of Kentucky is an academic institution that uses evidence-based practice to guide care. With the published updated 2018 PADIS guidelines, the entire university should be focused on improving sedation practices, thus improving patient outcomes.

In accordance with this model, a literature review was undertaken for the purposes of planning this project and creating an education intervention. The literature review findings were discussed earlier in this report. The results from this search were the foundation for project development and implementation in the targeted care areas. Following the literature review, a critique was performed which discovered sufficient evidence to support the use of a light sedation protocol and the use of educational outreach, change champions, and opinion leaders for changing practice behaviors. Implementation strategies utilized in the AHRQ Model of Knowledge Transfer were useful for developing utilized in conjunction with the Iowa Model to create an evidence-based practice intervention to disseminate information to bedside nursing. Specifically, the AHRQ Model of Knowledge Transfer highlights that academic detailing along with the use of a change champion and opinion leader is an effective way to implement a

practice change (Titler, 2008). As previously discussed, education alone is not enough to create a long-lasting change in care delivery. Following the Iowa Model framework, the intervention was put into action by the primary investigator.

From the development of the education intervention, a survey was created to assess the bedside nursing staff's knowledge and perceived confidence levels and allowed them to identify perceived barriers, which allows the primary investigator to determine if the intervention was effective. Data from the surveys can be analyzed to assess the effect of educational outreach, change champions, and opinion leaders on nurses' knowledge, perceived confidence, and perceived barriers. Monitoring and analyzing the structure, process, and outcome data is imperative to the success of a practice change (Melnyk & Fineout-Overholt, 2015). Improving patient outcomes and promoting quality improvement initiatives is the basis for the Iowa Model of Evidence-Based Practice to Promote Quality Care. The next important step in this framework is sharing the results from the evaluation of the practice change (Melnyk & Fineout-Overholt, 2015). Sharing these results improves practice not only in one organization but throughout the entire medical discipline. Not only will the data from the surveys uncover the educational needs of the bedside staff, it will also be used to determine if the use of educational outreach, change champions, and opinion leaders were effective strategies for engaging registered nurses in evidence-based practice implementation.

Purpose

The purpose of this practice inquiry is to determine the effectiveness of evidence-based practice implementation strategies; specifically, the use of change champions, educational outreach, and change champions along in conjunction with standard education. This process included assessing bedside nurses' knowledge and perceived confidence regarding a previously

established sedation/analgesia protocol, identifying gaps in knowledge or educational needs, and determining perceived barriers of the sedation protocol before and after the implementation of an education intervention. The specific aims of this study are as follows:

Aim 1: Determine if the use of educational outreach, change champions, and opinion leaders is an effective way to improve nurses' knowledge and perceived confidence and eliminating perceived barriers.

Aim 2: Evaluate the bedside nurses' knowledge and perceived confidence in using the MICU oral/IV push sedation/analgesia protocol and identify areas to improve knowledge and confidence.

Aim3: Assess what perceived barriers the bedside nursing staff identify for using the sedation protocol.

Methods

Study Permission

This quality improvement project received exempt approval under the UK IRB, entitled *Increasing Adherence to a Light Sedation Protocol by Increasing Nursing Knowledge and Confidence* (Approved- 1/30/2020 IRB #51429). The project was also approved by the University of Kentucky Nursing Research Council (Approved-6/12/2019).

Setting

This quality improvement project was completed in the Medicine Intensive Care Unit (MICU) on the 9th and 10th floor at the University of Kentucky Medical Center. There are three separate MICUs between these two floors, two of the units consist of 16 ICU beds and are managed by a resident/fellow teams versus the third unit which consists of 12 ICU beds and is

run by an advanced practice provider team. The MICU consists of approximately 160 bedside registered nurses. This project was conducted from October 2019 through January 2020.

Study Population

Inclusion criteria for participation in this quality improvement project was limited to bedside registered nurses employed by the University of Kentucky Medical Center who work for the Pulmonary/Medicine service line on the 9th and 10th floor Medicine Intensive Care Units. Bedside nurses had to be 18 years of age or older. Study participants must work in the Medicine Intensive Care Units on the 9th and 10th floor during the study period.

Study Design

This project used a pre/post-test research study design with an education intervention. A cover letter was attached to both the pre and posttest surveys (Figure 1). The pre-survey (Figure 3) was distributed by email, through the individual unit email listserv, to bedside nursing staff allowing them up to two weeks to complete the survey. The primary investigator, acting as change champion and opinion leader, used the practice of educational outreach to discuss the MICU Oral/IV Push Sedation Protocol with bedside nurses for a two-week period by interfacing with staff nurses at the bedside and in their units with a PowerPoint presentation detailing the MICU Oral/IV Push Sedation Protocol (Titler, 2008). The post-survey (Figure 3) was distributed in the same way as the pre-survey following completion of the education sessions, and once again the bedside nurses were given two weeks to complete the survey. This design assesses the effectiveness of the education intervention on the bedside nurses' knowledge of the MICU Oral/IV Push Sedation Protocol and their perceived confidence in utilizing the protocol and how they perceive barriers to implementing evidence-based practices. The survey was

pivotal to assessing the correlation between knowledge and perceived confidence with perceived barriers.

For this study, an education intervention was developed following a review of the literature and the light sedation protocol previously established by the MICU pharmacy team. A PowerPoint presentation was created that detailed evidence to support the use of a light sedation protocol, inclusion and exclusion criteria for using the protocol, outline of the protocol, ordering the protocol, and general considerations for using the protocol. A survey was created and distributed to the nurses working in the UK MICU allowing the bedside nurse to answer the same questions anonymously before and after the intervention to better understand bedside nurses' level of knowledge, perceived confidence, and perceived barriers regarding the light sedation protocol. A survey was used to elicit information from the study population, because surveys are quick and efficient way to extract data (Cope, 2014). Information from the surveys will be used to determine obstacles associated with the evidence-based practice intervention (Melnyk, 2002).

Research Procedures & Data Collection

The pre and posttest surveys were distributed through the RN University of Kentucky email listserv via a REDCap link (2019). REDCap is an internet based electronic data capture program that allows researchers to design studies and collect data from participants (2019). REDCap was used to collect the pre and post-test survey data. No demographic data was collected through the survey to keep the bedside nurses' answers anonymous. The data extracted from the pre/posttest survey was analyzed once the posttest survey closed. Five questions were used to assess nurses' knowledge, five questions on a 5-point Likert scale were used to assess

perceived confidence, and the final question was a choose all that apply with up to 7 possible selections.

Data Analysis

Data analysis was performed following the completion of the pre/posttest survey and education sessions. The results from these surveys were analyzed using Statistical Analysis Software (SAS) and a 95% confidence interval was used when appropriate. Descriptive statistics, such as mean and standard deviation were used to assess the knowledge and confidence data. The mean answers correct regarding the five knowledge questions from the pretest and posttest scores were compared using an unpaired t-test. For each individual question rating confidence levels, the mean scores were analyzed using an unpaired t-test to determine if there was a significant change for how the staff rated their confidence level on a scale of 1 to 5. For the final question, each answer was analyzed individually using Pearson's Chi Square test to determine the number of staff who chose each specific answer and to determine if there was a significant change in the barriers that were chosen on the pre and posttest survey.

Results

Of the approximately 160 bedside registered nurses working in the 9th and 10th floor MICU, 83 nurses participated in the pretest and 57 nurses participated in the posttest. The nurses in the pretest and posttest group would likely be the same nurses; however, some who participated in the pretest survey may not have participated in the posttest survey and vice versa. Table 1 illustrates the data regarding the total knowledge score and confidence levels for the pretest and posttest. Table 2 depicts the data for the choose all that apply question that

allows the staff to choose what they see as barriers for using the sedation protocol. A 95% confidence interval was used throughout the analysis.

The knowledge questions were analyzed for the number of correct answers. The pretest ($n=83$) had a mean(SD) of 3.98(0.86) and the total knowledge score for the posttest ($n=57$) had a mean(SD) of 4.05(1.06) (Table 1). Between the mean number of knowledge questions correct between the pre and posttest there is not a statistically significant difference with a p value of 0.64. For the five questions rating confidence levels, four of the five confidence questions showed a statistically significant increase in the bedside nurses' confidence level (Table 1). Nurses rated their scores for feeling confident higher in the posttest in the following areas with higher mean values and significant p values, 1. 'I feel confident using the MICU oral/IV push protocol', 2. 'I can appropriately sedate my patients using the MICU oral/IV push protocol,' 3. 'I understand light sedation and why it is better to use for mechanically ventilated patients over continuous infusions of sedation,' and 4. 'I feel adequately trained to use the MICU oral/IV push protocol on mechanically ventilated patients.' The only event that did not have a statistically significant (p value: 0.08) difference was the nurses' rating 'I feel confident administering oral and IV sedation drugs as they are ordered in the MICU oral/IV push protocol'

There were no statistically significant changes in the barriers identified by the nursing staff to using the protocol from the choose all that apply question from the pretest and the posttest (Table 2). However, some of the data points are important to assess for a better understanding of how nurses responded to the question. In the pretest and posttest, 49.4% and 54.4%, respectively, of the bedside nurses identified self-extubation as a reason why they were hesitant to use the protocol. Despite receiving education, over 50% of the bedside nurses continued to identify patients appearing uncomfortable as a reason they felt hesitant about

using the protocol. Initially, 25% of the bedside nurses were hesitant to use the protocol related to not feeling confident in using the protocol. In the posttest, only 14% of the staff recognized not feeling confident as a reason for not using the protocol. Even though this change was not statistically significant, an 11% decrease in the number of staff members not feeling confident about the protocol is important for determining if education had an impact on confidence. Once again, the data was not statically significant, but the percentage of RNs who did not feel that they could adequately sedate their patients using the sedation protocol dropped from 55.4% on the pretest to 40.4% on the posttest. The percentage of nurses acknowledging hesitancy for the protocol increased in two categories of the posttest 1. ‘oral agents take too long to take effect’ and 2. ‘the oral/IV push sedation protocol was too time intensive’. The increase in these two areas was not statistically significant from the pretest survey.

Discussion

Clinical practice guidelines published by the Society of Critical Care Medicine identify light sedation as the ideal level of sedation for mechanically ventilated patients in the ICU (Devlin et al, 2018). This quality improvement project was focused on the efficacy of educational outreach, change champions, and opinion leaders on bedside registered nurses’ knowledge and perceived confidence regarding a light sedation protocol and the identification of barriers to using the EBP. Specifically, does a lack of knowledge and low levels of perceived confidence affect what bedside nurses identify as barriers to using the light sedation protocol. Identifying barriers is relevant to increasing compliance to practice changes so that concerns can be addressed by educators and other care team members. It is imperative to assess bedside nurses’ attitudes towards sedation practices, because without their support adoption of new practices does not occur (Guttormson, 2019).

The total knowledge mean score from the pretest and posttest, 3.98 and 4.05 respectively, did not demonstrate a statistically significant change. The mean scores from both the pretest and posttest were relatively high which indicates that bedside nursing staff had a firm understanding of the protocol prior to the intervention. Since the nurses who participated in the study performed well on the knowledge assessment part of the pre and post survey, the data indicates that a lack of knowledge does not appear to be a reason why nurses are hesitant to use the light sedation protocol or prevent them from identifying barriers. Without significant changes in these scores, it cannot be determined if the educational intervention in conjunction with the change champion, opinion leader, and educational outreach was an effective strategy for improving knowledge. There was a statistically significant change (p value: .001) in the nurses scoring their perceived confidence levels for the statement, 'I feel adequately trained to use the MICU oral/IV push protocol on mechanically ventilated patients,' with a pretest survey mean score of 3.38 and a posttest survey mean score of 3.95. This change in perceived confidence levels does demonstrate that nurses responded well to the educational intervention.

The data did illustrate a statistically relevant increase in how nurses rated their perceived confidence levels utilizing the sedation protocol after receiving the education intervention. The mean scores for four out of the five confidence level questions improved from the pre-survey to the post-survey with statistically significant p -values (Table 1). Improvements in perceived confidence levels would demonstrate a positive outcome with the use of education along with a change champion, opinion leader, or educational outreach. The one statement that did not show a statistically significant improvement in confidence levels is 'I feel confident administering oral and IV sedation drugs as they ordered in the MICU oral/IV push protocol.' This statement can be used to develop future education for the bedside nursing staff, such as a simulation or web-

based training, that would help nurses to practice medication administration. In the choose all that apply question, 25.3% of nurses identified 'not confident in using the protocol' as a barrier in the pre-survey, but only 14.0% of the nurses identified that as a barrier in the post-survey. Despite this change not being statistically significant, there was a decrease in the number of nurses who selected this barrier in the post-survey which demonstrates similar findings as the confidence level questions. Education made nurses feel more confident in using the protocol in the clinical setting.

The barriers that were highlighted by the bedside nursing staff are important for developing future interventions for adoption evidence-based practice changes. Barriers that were identified, in the choose all that apply question, by over 50% of the bedside nursing staff in the MICU should be explored in greater depth to better understand why they exist (Table 2). 'Self-extubation', 'inability to adequately sedate patients', and 'patients appearing uncomfortable' are the highest chosen perceived barriers from the pre and posttest survey. These barriers prevent staff from changing bedside practice consistent with the protocol and might impact compliance to new practice standards. While not as many nurses identified the other barriers including: 'protocol is too time intensive', 'continuous sedation is easier', and 'oral agents take too long to take effect,' it is still important to acknowledge that they can impact compliance to the light sedation protocol.

Overall, the use of educational outreach, a change champion, and opinion leader did not have an effect on the knowledge assessment scores, because the nurses appear to be knowledgeable of the established protocol before and after the intervention; however, there were improvements in the how nurses rated their perceived confidence levels. There were no statistically significant changes in the number and frequency of barriers that were identified in

the pre and posttest survey which demonstrates that there is no correlation between increased levels of knowledge and perceived confidence with the identification of barriers. Following the Iowa Model, this information can be used to create future interventions to help implement and adopt evidence-based practice (Melnik & Fineout-Overholt, 2015).

Summary

The aims of this study were to determine if the use of educational outreach, change champions, and opinion leaders is an effective way to improve nurses' knowledge and confidence and eliminate perceived barriers, evaluate the bedside nurses' knowledge and confidence in using the MICU oral/IV push sedation/analgesia protocol and identify areas to improve knowledge and confidence, and assess what perceived barriers the bedside nursing staff identify for using the sedation protocol. The evaluation of nurses' knowledge and confidence in using the MICU oral/IV push sedation analgesia protocol demonstrated that nurses performed well on the five knowledge assessment questions on the pre and post-test surveys before and after the intervention and they demonstrated improved confidence levels on the post-test survey. Areas where nurses felt less confident, like the administration of medications using the MICU oral/IV push sedation/analgesia protocol, should be assessed further to develop interventions to improve compliance.

The identification of barriers in the pre and post-test survey demonstrates areas that require more education and explanation. Having this data allows providers and staff development to create action plans to improve compliance. The educational outreach and use of change champions and opinion leaders can be reassessed and used in other future interventions. This data provides evidence to infer that informed and confident nurses still see problems with using this established protocol. This evidence suggests that implementing sedation practices is a

multifactorial problem in the ICU and requires a multidisciplinary approach. All members of the medical team must be aware of the practice change and understand their role in increasing adherence to the protocol.

Limitations

A small sample size limits generalizability on the collected data, but it does provide insight into the target population. Data about the participants in the survey would further allude to the bedside nurses' sedation practices. Identifying the staff members years of service and the amount of time they have worked specifically in the MICU could further determine if more experience influences level of confidence and knowledge. On the other hand, newer nurses with less experience might be more willing to adopt new practices and change their bedside behaviors. Understanding these different demographics would help to identify which staff members require more education and further intervention. Creating an open-ended response question on the survey would allow bedside registered nurses to recognize other barriers to utilizing the sedation/analgesia protocol than those that were provided in the choose all that apply question in the pre and posttest survey.

According to Titler, utilization of change champions and opinion leaders is more effective when there are more than of each other these individuals (2008). In this study, the primary investigator was acting as both the change champion and the opinion leader. These roles should be very distinct when using them for the education intervention. A team made up of multiple clinicians would increase the spread of education and the practice change across these intensive care units. Advanced practice providers, physicians, pharmacists, and respiratory therapists are other key members of the interdisciplinary team effect how patient care is provided. Opening this quality improvement project to team members of other disciplines

could increase understanding of low compliance. Sending a survey to all members of the interdisciplinary team and providing them with education could appreciate how other medical teams understand the sedation protocol. Making the entire medical team aware of updated sedation practices will unify the team on the patient plan of care. Determining the views of the providers based on number of years of experience and to what level of care the providers are practicing, for example pharmacists, residents, fellows, attendings, and advanced practice providers, could inform team member compliance and attitudes.

Implications for Practice and Future Recommendations

This project suggested that an education intervention can increase confidence levels in the bedside nursing staff using the light sedation protocol. Nurses also identified feeling more adequately trained after receiving education about the light sedation protocol. However, there was no change in the number of identified perceived barriers seen in the posttest survey after the intervention was performed. With this information, it can be inferred that educational outreach, change champions, and opinion leaders in coordination with education can help nurses perceive the feeling of increase confidence. To better serve the staff who currently work in these units, more interventions should be used to assess the readiness for change and subsequently formal training should be completed to help facilitate the usage of the light sedation protocol. One way to prepare bedside RNs is to provide a simulation that allows staff to work through the protocol in a safe non-threatening environment. This would help bedside staff to work on assessing patients using the CPOT and RASS and then determining the first line treatment for pain and agitation. The bedside nurses at UKMC are required to complete annual competencies which include web-based trainings (WBTs). The creation of a WBT would require nurses to review the protocol and answer questions about the training they received. Adding this WBT to the nurses'

annual competencies would ensure that bedside ICU RNs reviewed the protocol yearly. Nurses that are newly hired into the unit should receive a formal training that introduces the light sedation protocol during their ICU orientation. Because targeted light sedation is supposed to be the standard of care, this is what should be taught to the new hires working at the bedside in these units. If bedside nurses learn to use the protocol on orientation this will become the practice they adopt and use daily with each patient.

Data from the project inferred the need for a multidisciplinary approach to sedation administration to patients in the MICU. Creating a similar survey and distributing it to the members of the multidisciplinary team would help to highlight how the entire medical team perceives light sedation protocols. Including pharmacists and physicians in the education sessions would allow for team members to be informed and to ask questions about the light sedation protocol. Similar to the bedside registered nurses, the residents who come onto the Pulmonary/Medicine ICU service each month should receive formal training on ordering and using the light sedation protocol during their MICU orientation. If the protocol is not ordered, bedside nurses cannot carry on with that specific plan of care.

To further address the need for a multidisciplinary approach, creating a light sedation protocol taskforce made up of peers from the 9th and 10th floor MICU would improve dissemination of education through discussion and team leadership. It would be helpful team up with other care team members, such as pharmacists and advanced practice providers, to act as the change champions (Titler, 2008). These providers are looked to for guidance about care practices, they are trusted, and they are held in high esteem. As previously mentioned, a multidisciplinary approach to implementing EBP is an effective way to create change.

CPOT and RASS scores are important assessment data that should be used to determine the amount of sedation and analgesia the patient requires. The CPOT and RASS goals should be assessed during daily rounds on every mechanically ventilated patient. The goal for these scores should be assessed by the entire interdisciplinary team during the medical team rounds for every patient. A tool often used in the ICU to discuss the patient's plan of care is FAST HUGS BID, which stands for feeding, analgesia, sedation, thromboembolic prophylaxis, head of bed elevation, ulcer prophylaxis, glycemic control, spontaneous breathing trial, bowel regiment, indwelling devices, and de-escalation of antibiotics (Nair, 2017). It would be imperative to discuss the patient's CPOT and RASS goals, medication administration, and sedation/analgesia requirements while discussing analgesia and sedation in the FAST HUGS BID mnemonic.

Currently, the order set for the light sedation protocol is listed within the standard ICU-Adult IV Pain/Sedation order set. This could be difficult for new providers to find in the electronic health record. Creating a formal PUL-MICU Sedation order that autopopulates with the PUL-MICU Admission order set would help to standardize how providers are ordering analgesia and sedation for their patients. Eliminating the difficulty of ordering the protocol could also increase adherence to the protocol.

To further assess sedation practices of the bedside nursing staff in the MICU, a chart audit should be performed on patients who meet the criteria for the light sedation protocol. The chart audit should consist of examining the amount of sedation being administered to mechanically ventilated patients including drip medications, oral medications, and IV push medications. Initially, it is important to look at the number of hours sedation and analgesic drips are actively being administered to patients. A further chart review would look to assess

frequency and values for CPOT and RASS scores, including assessing and reassessing CPOT and RASS scores before and after an intervention.

Conclusion

As more research is done to assess the need for sedation and analgesia in the mechanically ventilated patient population, bedside nursing practice must continue to change and reflect these new findings. Evidence based practice is the guiding force for all patient care, especially in the critically ill population. Because registered nurses spend large quantities of time interacting with and providing direct care to patients and their support systems it is of the utmost importance to ensure that they understand practice changes. Without vigilant bedside nurses, patient outcomes would decline drastically.

Despite educating bedside nursing staff about the light sedation protocol that was established as the standard practice for mechanically ventilated patients in the MICU, there are still perceived barriers to using the light sedation protocol. When trying to implement a change in standard practice, education is an important intervention to ensure that staff members are well versed in new protocols and understand how to utilize these changes when providing care. However, as this quality improvement project demonstrates, even with education and peer instruction, staff members will still identify barriers to changing their current practice. While education can improve knowledge and confidence in bedside nursing staff, it alone may not be enough to establish practice changes for a high-risk patient population. The entire interdisciplinary team needs to be educated on practice changes in order to overcome perceived barriers. Interdisciplinary accountability creates a system of checks and balances to ensure that the entire medical team is actively working towards the same goal which is improved patient outcomes.

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Table 1. Pre and Posttest Scores for Knowledge and Confidence levels

| | Pre (<i>n</i> = 83) | Post (<i>n</i> = 57) | <i>p</i> |
|--|----------------------|-----------------------|----------|
| | Mean (SD) | Mean (SD) | |
| Total knowledge score- Answers Correct | 3.98 (0.86) | 4.05 (1.06) | .64 |
| I feel confident using the MICU oral/IV push protocol | 3.25(0.97) | 3.63(0.89) | .02 |
| I can appropriately sedate my patients using the MICU oral/IV push protocol | 3.01(1.04) | 3.46(0.95) | .01 |
| I understand light sedation and why it is better to use for mechanically ventilated patients over continuous infusions of sedation | 4.10(0.95) | 4.42(0.68) | .03 |
| I feel confident administering oral and IV sedation drugs as they are ordered in the MICU oral/IV push protocol. | 3.88(1.01) | 4.16(0.80) | .08 |
| I feel adequately trained to use the MICU oral/IV push protocol on mechanically ventilated patients | 3.38(1.12) | 3.95(0.79) | .001 |

Table 2. Pre and Posttest Choose All That Apply Data- Barriers

| | Pre (<i>n</i> =83) # of RNs who identified this is a barrier (% of total <i>n</i>) | Post (<i>n</i> =57) # of RNs who identified this is a barrier (% of total <i>n</i>) | <i>p</i> value |
|---|--|---|----------------|
| Risk for Self-Extubation | 41 (49.4%) | 31 (54.4%) | .56 |
| Patient Appears Uncomfortable | 46 (55.4%) | 31 (54.5%) | .90 |
| Not Confident Using the Protocol | 21 (25.3%) | 8 (14.0%) | .11 |
| Do Not Feel the Patient Can Adequately be Sedated | 46 (55.4%) | 23 (40.4%) | .08 |
| Continuous Sedation is Easier | 31 (37.3%) | 20 (35.1%) | .79 |
| Oral Agents Take Too Long to Take Effect | 30 (36.1%) | 25 (43.9%) | .36 |
| Protocol is too Time Intensive | 25 (30.1%) | 22 (38.6%) | .30 |

Figure 1. Form F Cover Letter

Form F for Nurses survey:

Reminder, please consider completing the survey below:

Dear UK HealthCare ICU nurses,

Our research proposal entitled, “Increasing Adherence to a Light Sedation Protocol by Increasing Nursing Knowledge and Confidence” seeks to investigate the impact education has on a nurse’s confidence and knowledge about a protocol and how that affects adherence to the protocol.

Although you will not get personal benefit from taking part in this research study, your responses will help us understand the effects of education on increasing adherence to the sedation protocol.

We hope to receive completed questionnaires from about 100 of you, so your answers are important to us. Of course, you have a choice about whether or not to complete the survey/questionnaire, but if you do participate, you are free to skip any questions or discontinue at any time.

The survey/questionnaire will take about 5 minutes to complete.

There are no known risks to participating in this study.

Your response to the survey is anonymous which means no names will appear or be used on research documents or be used in presentations or publications. The research team will not know that any information you provided came from you, nor even whether you participated in the study.

Please be aware, while we make every effort to safeguard your data once received on our servers via REDCap, given the nature of online surveys, as with anything involving the Internet, we can never guarantee the confidentiality of the data while still en route to us.

If you have questions about the study, please feel free to ask; my contact information is given below. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866- 400-9428.

Thank you in advance for your assistance with this important project. We request you complete the survey within 14 days of receipt.

Sincerely,

Katie Rust, BSN, RN, University of Kentucky College of Nursing

PHONE: 859-640-2212

E-MAIL: klrust2@uky.edu

Figure 2. MICU Oral/IV Push Sedation Protocol Education



Pain: What if PRN not enough?

- ▶ If patient requires 3 consecutive doses of PRN hydromorphone in a 1 hour period
 - ▶ Oxycodone 5 mg PT q4h (opioid naïve)
 - ▶ Oxycodone 10 mg PT q4h (opioid tolerant)
- ▶ These orders will have the following special instructions in them:
 - ▶ HOLD for RASS < -2 or CPOT of 0 or patient pain-free.
 - ▶ **2 or more consecutive held doses should prompt the discontinuation of the order by the MICU team and rely on the PRN approach**

Sedation: What if PRN not enough?

- ▶ If patient requires 3 consecutive doses of lorazepam in 15 minute period and is still agitated despite haloperidol, start rescue propofol infusion.
- ▶ If propofol initiated, the goal is to wean off propofol in 8 hours via the following means on the next slide

Sedation

- ▶ Assessed with RASS (goal -2 to 0)
- ▶ All patients will have the following order
 1. Lorazepam IV 2 to 4 mg q5min PRN agitation
 - ▶ Special instructions: Give 2 mg x1, if agitation uncontrolled in 5 minutes give 4 mg, if agitation uncontrolled in 5 minutes give 4 mg again. Call team if patient requires > 10 mg in 15 minute period
 2. Haloperidol IV 5-10 mg q15min PRN agitation unresponsive to lorazepam
 - ▶ Special instructions: Give haloperidol if patient still agitated despite 3 doses of lorazepam in a 15 minute period. Give 5 mg for RASS +2, 10 mg for RASS > +2.

Will need to add oral agents to wean off propofol (in this order)

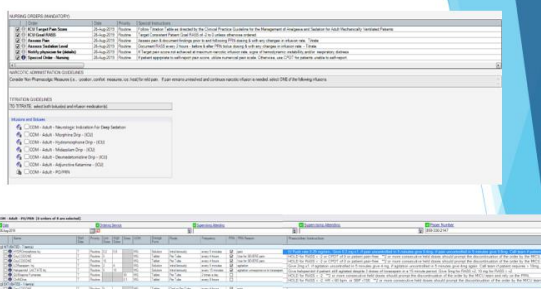
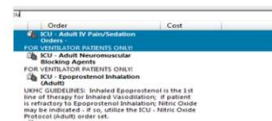
1. Quetiapine 50 mg BID (max: 200 mg BID)
Special Instructions: HOLD for RASS < -2
2 or more consecutive held doses should prompt the discontinuation of the order by the MICU team and rely on the PRN approach
2. If hemodynamically stable, clonidine 0.1 mg q8h (max: 0.5 mg q8h)
Special Instructions: HOLD for RASS < -2, HR < 60 bpm, or SBP < 100 mmHg.
2 or more consecutive held doses should prompt the discontinuation of the order by the MICU team and rely on the PRN approach
3. If sedation difficulties persist, contact MICU pharmacist regarding the following:
 - a. Home medication evaluation to reconcile medications
 - b. Scheduled benzodiazepine
 - c. Melatonin

Ordering in SCM

- ▶ Must order through the special order set by the provider.
- ▶ Order set has HOLD parameters and other special instructions regarding when to give which particular dose in the PRN range order.

Ordering in SCM

- ▶ CPOT, RASS, and the associated orders must still be ordered through the ICU-Adult IV Pain/Sedation Orders
- ▶ Nursing: CPOT parameter does not autopopulate



General Considerations

- 1.) Document CPOT and RASS every 2 hours- and before & after PRN dosing.
- 2.) If a patient's sedation goals change from routine (-2 to 0) to deep sedation (-4 to -5), the RASS goal MUST be changed in SCM.
- 3.) Propofol is the rescue continuous sedative of choice in the MICU.
- 4.) If using propofol for ≥ 72 hours for deep sedation, triglycerides and CK should be checked q72h. A triglyceride level of 1000 is the cut-off for discontinuing propofol for hypertriglyceridemia.
- 5.) Monitor QTc when using antipsychotics. Relative contraindication QTc > 500.

What to do when extubated?

- ▶ D/C all IV pain and agitation orders
- ▶ Order oxycodone 5 mg PO/PT q4h PRN pain (in the PUL-MICU sedation protocol also).

Questions or Concerns?

- ▶ Email:
 - ▶ Katie Rust (kkrust2@uky.edu)

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Inclusion Criteria:

- Mechanical Ventilation
- FiO2 <60%
- PEEP < or = 12

Exclusion Criteria:

- Patients with a deeper RASS goal (-4, -5) ordered by the medical team
- Patients receiving neuromuscular blockers
- Patients in status epilepticus requiring continuous benzodiazepine or propofol infusion
- Patients in severe alcohol withdrawal and/or delirium tremens
- Palliative or comfort care

Pain:

- Assess with CPOT (goal 0-2)
- All patients will have the following order
 - Hydromorphone IV 0.2 to 0.8 mg q5min PRN pain
 - Special instructions: Give 0.2 mg x1, if pain uncontrolled in 5 minutes give 0.4mg, if pain uncontrolled in 5 minutes give 0.8mg. Call team if patient requires > 1.4 mg in a 15-minute period
 - If patient requires 3 consecutive doses of PRN hydromorphone in a 1-hour period
 - Oxycodone 5 mg PT q4h (opioid naïve)
 - Oxycodone 10 mg PT q4h (opioid tolerant)
 - These orders will have the following special instructions in them:
 - HOLD for RASS < -2 or CPOT of 0 or patient pain-free.
 - **2 or more consecutive held doses should prompt the discontinuation of the order by the MICU team and rely on the PRN approach**

Sedation:

- Assess with RASS (goal -2 to 0)
- All patients will have the following order
 - Lorazepam IV 2 to 4 mg q5min PRN agitation
 - Special instructions: Give 2mg x1, if agitation uncontrolled in 5 minutes give 4 mg, if agitation uncontrolled in 5 minutes give 4mg again. Call team if patient requires > 10mg in 15-minute period
 - Haloperidol IV 5-10 mg q15min PRN agitation unresponsive to lorazepam
 - Special instructions: Give haloperidol if patient still agitated despite 3 doses of lorazepam in a 15-minute period. Give 5mg for RASS +2, 10 mg for RASS > +2.
- If patient requires 3 consecutive doses of lorazepam in 15-minute period and is still agitated despite haloperidol, start rescue propofol infusion.
- If propofol initiated, goal to wean off propofol in 8 hours, add oral agents if necessary:
 - 1. Quetiapine 50 mg BID (max: 200 mg BID). Special instructions: HOLD for RASS < -2. **2 or more consecutive held doses should prompt the discontinuation of the order by the MICU team and rely on the PRN approach**
 - 2. If hemodynamically stable, clonidine 0.1 mg q8h (max: 0.5mg q6h). Special instructions: HOLD for RASS < -2, HR <60 bpm, or SBP < 100. **2 or more consecutive held doses should prompt the discontinuation of the order by the MICU team and rely on the PRN approach**
- 3. If sedation difficulties persist, contact MICU pharmacist regarding the following:
 - a. Home medication evaluation to reconcile medications
 - b. Scheduled benzodiazepine
 - c. Melatonin

Bedside nurses should document the CPOT and RASS score every 2 hours and 30 minutes to 1 hour following any intervention. The CPOT and RASS score should be assessed before and after PRN dosing. In the ICU care is constantly changing and as providers assess the patient the goal RASS score might change depending on their needs. If a patient requires a deeper RASS score goal, -4 to -5, the provider must change the RASS score goal in electronic medical record.

Figure 3. Survey Questions

Survey Questions

1. According to the MICU oral/IV push sedation protocol, what is the goal RASS score for patients on mechanical ventilation?
 - a. -3 to -5
 - b. + 1 to +3
 - c. -3 to +2
 - d. -2 to 0
2. What criteria would exclude a mechanically ventilated patient from receiving MICU oral/IV push sedation protocol?
 - a. PEEP \leq 12
 - b. FiO₂: >60%
 - c. history of drug dependency
 - d. Patient is receiving vasopressors
3. Light sedation is associated with which of the following?
 - a. decreased mechanical ventilator time
 - b. increased risk for Ventilator Associated Pneumonia
 - c. increased risk for delirium
 - d. increased risk for pressure ulcers
4. If the nurse holds two doses of scheduled oxycodone related to the patient's RASS score of <-2, the MICU oral/IV push protocol orders say to?
 - a. cut the dose in half
 - b. discontinue the medication
 - c. change the PO medication back to IV
 - d. continue with current dosing
5. The patient has received three doses of IV lorazepam and IV haldol and remains agitated with a RASS score of +2 or >, the next reasonable step would be to?
 - a. hold IV sedation
 - b. initiate IV propofol drip
 - c. triple the dose of lorazepam
 - d. give a dose of IV rocuronium

On a scale from 1-5 (1=strongly disagree, 2=moderately disagree, 3=neither agree nor disagree, 4=moderately agree, 5=strongly agree), please rate your agreement with the following statements:

- I feel confident using the MICU oral/IV push protocol
1 2 3 4 5
- I can appropriately sedate my patients using the MICU oral/IV push protocol
1 2 3 4 5

- I understand light sedation and why it is better to use for mechanically ventilated patients over continuous infusions of sedation

1 2 3 4 5

- I feel confident administering oral and IV sedation drugs as they are ordered in the MICU oral/IV push protocol

1 2 3 4 5

- I feel adequately trained to use the MICU oral/IV push protocol on mechanically ventilated patients

1 2 3 4 5

Please choose from the following responses: What reason(s) do you identify for why you are hesitant to use the MICU oral/IV push protocol?

- Self-extubation
- Patient appears uncomfortable
- Not confident in using the protocol
- Do not feel that you can adequately sedate patients
- Continuous sedation is easier
- Oral agents take too long to take effect
- The MICU oral/IV push protocol is too time intensive




| Order | Cost |
|--|------|
|  ICU - Adult IV Pain/Sedation Orders - FOR VENTILATOR PATIENTS ONLY! | |
|  ICU - Adult Neuromuscular Blocking Agents FOR VENTILATOR PATIENTS ONLY! | |
|  ICU - Epoprostenol Inhalation (Adult) UKHC GUIDELINES: Inhaled Epoprostenol is the 1st line of therapy for Inhaled Vasodilation; if patient is refractory to Epoprostenol Inhalation; Nitric Oxide may be indicated - if so, utilize the ICU - Nitric Oxide Protocol (Adult) order set. | |

Figure 5. EHR CPOT and RASS Documentation